

Amendments to the Claims:

In compliance with the Revised Amendment Format, a complete listing of claims is provided herein.

1. (Currently Amended) A method of producing polymer-polystyrene foam, comprising:

heating a polymer-polystyrene resin to a melt temperature therefor;

selecting at least one blowing agent consisting of at least one ambient gas;

combining the heated polymer-polystyrene resin with the at least one blowing agent to create a mixture; [[and]]

extruding polymer-polystyrene foam sheet from the mixture-comparable-in-quality to that obtainable with hydrocarbon blowing agents, the polymer-polystyrene foam having a density of less than between about 0.05 g/cc and about 0.15 g/cc and an average cell diameter of about 0.05 mm to about 1 mm, the polystyrene foam sheet having a thickness of between about 0.75 mm and about 6 mm;

wherein the extruding comprises guiding the mixture through an annular exiting channel to an exit with a cross-sectional area larger than at least one point within the exiting channel, and reducing friction within at least a portion of the exiting channel; and

wherein the exiting channel comprises a first portion from an entrance to a point having a smallest cross-sectional area and a second portion from the point having the smallest cross-sectional area to the exit, and wherein the reducing comprises controlling a temperature of the second portion.

2. (Cancelled)

3. (Currently Amended) The method of claim [[2]] 1, wherein the cross-sectional area of the exit is at least about twice as large as that of the at least one point.

4. (Cancelled)

5. (Cancelled)

6. (Currently Amended) The method of claim [[5]] 1, wherein the controlling comprises keeping the second portion at a temperature of between about 15° Celsius and about 95° Celsius.

7. (Original) The method of claim 6, wherein the keeping comprises keeping the second portion at a temperature of between about 25° Celsius and about 60° Celsius.

8. (Currently Amended) The method of claim [[5]] 1, further comprising controlling pre-foaming in the second portion.

9. (Currently Amended) The method of claim 8, A method of producing polymer foam, comprising:

heating a polymer resin to a melt temperature therefor;

selecting at least one blowing agent consisting of at least one ambient gas;

combining the heated polymer resin with the at least one blowing agent to create a mixture;

extruding polymer foam from the mixture comparable in quality to that obtainable with hydrocarbon blowing agents, the polymer foam having a density of less than about 0.15 g/cc, wherein the extruding comprises guiding the mixture through an exiting channel to an exit with a cross-sectional area larger than at least one point within the exiting channel and reducing friction within at least a portion of the exiting channel;

wherein the exiting channel comprises a first portion from an entrance to a point having a smallest cross-sectional area and a second portion from the point having the smallest cross-sectional area to the exit, and wherein the reducing comprises controlling a temperature of the second portion; and

controlling pre-foaming in the second portion, wherein controlling pre-foaming in the second portion comprises locating at least one air gap between the first portion and the second portion.

10. (Currently Amended) The method of claim [[4]] 1, wherein the reducing comprises coating the at least a portion of the exiting channel with a friction-reducing substance.

11. (Original) The method of claim 10, wherein the coating comprises coating the at least a portion of the exiting channel with titanium nitride.

12. (Currently Amended) The method of claim 10, A method of producing polymer foam, comprising:

heating a polymer resin to a melt temperature therefor;

selecting at least one blowing agent consisting of at least one ambient gas;

combining the heated polymer resin with the at least one blowing agent to create a mixture;

extruding polymer foam from the mixture comparable in quality to that obtainable with hydrocarbon blowing agents, the polymer foam having a density of less than about 0.15 g/cc, wherein the extruding comprises guiding the mixture through an exiting channel to an exit with a cross-sectional area larger than at least one point within the exiting channel and reducing friction within at least a portion of the exiting channel;

wherein the reducing comprises coating the at least a portion of the exiting channel with a friction-reducing substance; and

wherein the coating comprises coating the at least a portion of the exiting channel with tungsten carbon carbide.

13. (Currently Amended) The method of claim 10, A method of producing polymer foam, comprising:

heating a polymer resin to a melt temperature therefor;

selecting at least one blowing agent consisting of at least one ambient gas;

combining the heated polymer resin with the at least one blowing agent to create a mixture;

extruding polymer foam from the mixture comparable in quality to that obtainable with hydrocarbon blowing agents, the polymer foam having a density of less than about 0.15 g/cc, wherein the extruding comprises guiding the mixture through an exiting channel to an exit with a cross-sectional area larger than at least one point within the exiting channel and reducing friction within at least a portion of the exiting channel;

wherein the reducing comprises coating the at least a portion of the exiting channel with a friction-reducing substance; and

wherein the coating comprises coating the at least a portion of the exiting channel with a composite comprising nickel and one of tetrafluoroethylene fluorocarbon polymer and fluorinated ethylene-propylene.

14. (Original) The method of claim 1, wherein selecting the at least one blowing agent comprises selecting from among carbon dioxide, nitrogen and argon.

15. (Cancelled)

16. (Cancelled)

17. (Currently Amended) The method of claim [[16]] 1, wherein the extruding comprises extruding polymer foam sheet from the mixture having less than about 5% gauge variation across a width thereof.

18-44. (Cancelled)

45. (Currently Amended) A method of producing polymer-polystyrene foam, comprising:

heating a polymer-polystyrene resin to a melt temperature therefor;

selecting at least one blowing agent consisting of at least one ambient gas;

combining the heated polymer-polystyrene resin with the at least one blowing agent to create a mixture;

extruding polymer-polystyrene foam having a density of less than about 0.15 g/cc from the mixture comparable in quality to that obtainable with hydrocarbon blowing

agents, comprising guiding the mixture through an exiting channel comprising a first portion from an entrance to a point having a smallest cross-sectional area and a second portion from the point to an exit; and

controlling pre-foaming in the second portion.

46. (Currently Amended) The method of claim 45, wherein the guiding comprises guiding the mixture through the exiting channel to an exit [[with]] has a cross-sectional area larger than at least one the point within the exiting channel.

47. (Currently Amended) The method of claim 46, wherein the cross-sectional area of the exit is at least about twice as large as that of the at least one point.

48. (Previously presented) The method of claim 46, wherein the extruding further comprises reducing friction within at least a portion of the exiting channel.

49. (Previously presented) The method of claim 48, wherein the reducing comprises controlling a temperature of the second portion.

50. (Previously presented) The method of claim 49, wherein the controlling comprises keeping the second portion at a temperature of between about 15° Celsius and about 95° Celsius.

51. (Previously presented) The method of claim 50, wherein the keeping comprises keeping the second portion at a temperature of between about 25° Celsius and about 60° Celsius.

52. (Previously presented) The method of claim 49, wherein the reducing comprises coating the at least a portion of the exiting channel with a friction-reducing substance.

53. (Previously presented) The method of claim 52, wherein the coating comprises coating the at least a portion of the exiting channel with titanium nitride.

54. (Currently Amended) ~~The method of claim 52, A method of producing polymer foam, comprising:~~

~~heating a polymer resin to a melt temperature, therefor;~~

selecting at least one blowing agent consisting of at least one ambient gas;
combining the heated polymer resin with the at least one blowing agent to create a mixture;

extruding polymer foam from the mixture comparable in quality to that obtainable with hydrocarbon blowing agents, comprising guiding the mixture through an exiting channel comprising a first portion from an entrance to a point having a smallest cross-sectional area and a second portion from the point to an exit, wherein the guiding comprises guiding the mixture through the exiting channel to an exit with a cross-sectional area larger than at least one point within the exiting channel;

wherein the extruding further comprises reducing friction within at least a portion of the exiting channel, and wherein the reducing comprises controlling a temperature of the second portion;

wherein the reducing comprises coating the at least a portion of the exiting channel with a friction-reducing substance, and wherein the coating comprises coating the at least a portion of the exiting channel with tungsten carbon carbide; and

controlling pre-soaming in the second portion.

55. (Currently Amended) The method of claim 52, A method of producing polymer foam, comprising:

heating a polymer resin to a melt temperature therefor;
selecting at least one blowing agent consisting of at least one ambient gas;
combining the heated polymer resin with the at least one blowing agent to create a mixture;

extruding polymer foam from the mixture comparable in quality to that obtainable with hydrocarbon blowing agents, comprising guiding the mixture through an exiting channel comprising a first portion from an entrance to a point having a smallest cross-sectional area and a second portion from the point to an exit, wherein the guiding comprises guiding the mixture through the exiting channel to an exit with a cross-sectional area larger than at least one point within the exiting channel;

wherein the extruding further comprises reducing friction within at least a portion of the exiting channel, and wherein the reducing comprises controlling a temperature of the second portion;

wherein the reducing comprises coating the at least a portion of the exiting channel with a friction-reducing substance, and wherein the coating comprises coating the at least a portion of the exiting channel with a composite comprising nickel and one of tetrafluoroethylene fluorocarbon polymer and fluorinated ethylene-propylene; and controlling pre-foaming in the second portion.

56. (Currently Amended) The method of claim 45, A method of producing polymer foam, comprising:

heating a polymer resin to a melt temperature; therefor;
selecting at least one blowing agent consisting of at least one ambient gas;
combining the heated polymer resin with the at least one blowing agent to create a mixture;

extruding polymer foam from the mixture comparable in quality to that obtainable with hydrocarbon blowing agents, comprising guiding the mixture through an exiting channel comprising a first portion from an entrance to a point having a smallest cross-sectional area and a second portion from the point to an exit; and

controlling pre-foaming in the second portion, wherein controlling pre-foaming in the second portion comprises locating at least one air gap between the first portion and the second portion.

57. (Previously presented) The method of claim 45, wherein selecting the at least one blowing agent comprises selecting from among carbon dioxide, nitrogen and argon.

58. (Cancelled)

59. (Currently Amended) The method of claim [[58]] 45, wherein the extruding comprises extruding polymer foam from the mixture having a density of between about 0.05 g/cc and about 0.15 g/cc and an average cell diameter of about 0.05 mm to about 1 mm.

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60. (Previously presented) The method of claim 59, wherein the extruding comprises extruding polymer foam sheet from the mixture having a thickness of between about 0.75 mm and about 6 mm.

61. (Previously presented) The method of claim 60, wherein the extruding comprises extruding polymer foam sheet from the mixture having less than about 5% gauge variation across a width thereof.

62. (Cancelled)